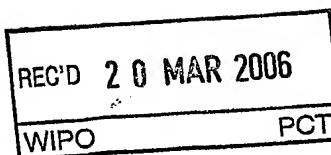


# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference <b>6013-150PCT</b>	<div style="display: flex; justify-content: space-between;"> <span><b>FOR FURTHER ACTION</b></span> <span>See Form PCT/IPEA/416</span> </div>	
International application No. <b>PCT/CA2005/000261</b>	International filing date ( <i>day/month/year</i> ) 23 February 2005 (23-02-2005)	Priority date ( <i>day/month/year</i> ) 23 February 2004 (23-02-2004)
International Patent Classification (IPC) or national classification and IPC IPC: <b>C08J 5/22</b> (2006.01) , <b>C08J 3/24</b> (2006.01) , <b>H01M 8/10</b> (2006.01) , <b>H01M 2/16</b> (2006.01)		
Applicant <b>UNIVERSITE LAVAL ET AL</b>		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <div style="margin-left: 20px;"> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of <u>24</u> sheets, as follows:</p> <div style="margin-left: 40px;"> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. 1 and the Supplemental Box.</p> </div> <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s))  , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> </div> <p>4. This report contains indications relating to the following items:</p> <div style="margin-left: 20px;"> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input checked="" type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p> </div>		
Date of submission of the demand 22 December 2005 (22-12-2005)	Date of completion of this report 10 March 2006 (10-03-2006)	
Name and mailing address of the IPEA/CA Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001(819)953-2476	Authorized officer  Reese A. Adeney (819) 997-2852	

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/CA2005/000261**Box No. I Basis of the report**1. With regard to the **language**, this report is based on:

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rules 12.3(a) and 23.1(b))
  - ☐ publication of the international application (Rule 12.4(a))
  - ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ the international application as originally filed/furnished
- ☒ the description:
- |  |      |  |
|--|------|--|
| <input type="checkbox"/> pages             |      | as originally filed/furnished                  |
| <input checked="" type="checkbox"/> pages* | 1-19 | received by this Authority on 27 February 2006 |
| <input type="checkbox"/> pages*            |      | received by this Authority on                  |
- ☒ the claims:
- |  |       |   |
|--|-------|---|
| <input type="checkbox"/> pages             |       | as originally filed/furnished                             |
| <input type="checkbox"/> pages*            |       | as amended (together with any statement) under Article 19 |
| <input checked="" type="checkbox"/> pages* | 20-24 | received by this Authority on 27 February 2006            |
| <input type="checkbox"/> pages*            |       | received by this Authority on                             |
- ☒ the drawings:
- |   |     |                               |
|---|-----|-------------------------------|
| <input checked="" type="checkbox"/> pages | 1-4 | as originally filed/furnished |
| <input type="checkbox"/> pages*           |     | received by this Authority on |
| <input type="checkbox"/> pages*           |     | received by this Authority on |
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/CA2005/000261

**Box No. II**      **Priority**

1.    ☐    This report has been established as if no priority had been claimed due to the failure to furnish within the prescribed time limit the requested:

☐    copy of the earlier application whose priority has been claimed (Rule 66.7(a)).

☐    translation of the earlier application whose priority has been claimed (Rule 66.7(b)).

2.    ☐    This report has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rule 64.1). Thus for the purposes of this report, the international filing date indicated above is considered to be the relevant date.

3.    Additional observations, if necessary:

The validity of the priority claims has been considered. The Authority does have in its possession a copy of the earliest filed application whose priority has been claimed. The claimed priority date is considered valid.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/CA2005/000261**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

## 1. Statement

Novelty (N)	Claims	1-36	YES
	Claims	none	NO
Inventive step (IS)	Claims	1-36	YES
	Claims	none	NO
Industrial applicability (IA)	Claims	1-36	YES
	Claims	none	NO

## 2. Citations and explanations (Rule 70.7)

D1: CA 2,343,184 (VICTREX) 23 March 2000

D1 discloses a method for the preparation of proton exchange membranes, based on cross-linked sulfonated poly (ether ether ketones), the cross-linking performed by thermally activating bridges of the polymer chains with polyatomic alcohols, which makes the polymer mechanically stronger and reduces its swelling by water. dry SPEEK polymer was dissolved in a solvent (water-acetone or water-alcohol mixtures), various amounts of the crosslinker were added, and after agitation, the solution was cast to obtain the membrane.

Novelty (N):

The subject matter of claims 1-36 is novel and thus does meet the criteria of Article 33(2) of the PCT.

The amendment to the present claims to restrict the sulfonated polymer to a degree of sulfonation greater than 0.6 and the ratio of polyol molecules per repeat unit of the sulfonated polymer higher than or equal to 1 is novel over D1.

Inventive Step (IS):

The subject matter of claims 1-36 is considered to involve an inventive step and thus does meet the criteria of Article 33(3) of the PCT. It would not be obvious to one skilled in the art to utilize the above-mentioned sulfonated polymer or the polyol cross-linking agent in the specific amounts used to produce cross-linked proton exchange membranes.

Industrial Applicability (IA):

The subject matter of claims 1-36 is industrially applicable and thus does meet the criteria of Article 33(4) of the PCT.

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

International application No.  
**PCT/CA2005/000261**

**Box No. VIII      Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The description at page 1 is objected to under PCT Article 5. All documents referred to in the description of any application must be available to the public.

The expression "incorporated by reference" on page 1 is objected to under PCT Article 5.